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7 # 1DS



US006628617B1

(12) **United States Patent**
Karol et al.

(10) Patent No.: **US 6,628,617 B1**
(45) Date of Patent: **Sep. 30, 2003**

(54) **TECHNIQUE FOR INTERNETWORKING
TRAFFIC ON CONNECTIONLESS AND
CONNECTION-ORIENTED NETWORKS**

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(73) Assignee: **Lucent Technologies Inc.**, Murray Hill,
NJ (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/261,807**

(22) Filed: **Mar. 3, 1999**

(51) Int. Cl.⁷ **H04L 12/56; H04L 12/64;**
H04L 12/66

(52) U.S. Cl. **370/237; 370/466; 370/477;**
370/401; 370/412; 370/352; 370/353; 370/354;
370/355; 370/356; 370/236; 370/230.1;
370/389; 370/395.1; 370/395.5; 370/395.65

(58) Field of Search **370/229, 230.1,**
370/235, 236, 237, 238, 352-353, 354,
355, 356, 357, 359, 389, 392, 395.1, 395.5,
395.51, 395.52, 395.65, 395.7, 395.72,
400, 401, 410, 412, 419, 428, 429, 465,
466, 468, 477

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,016,319 A * 1/2000 Kshirsagar et al. 370/399
6,055,561 A * 4/2000 Feldman et al. 370/220
6,091,725 A * 7/2000 Cheriton et al. 370/392
6,147,989 A * 11/2000 Esaki et al. 370/355
6,151,319 A * 11/2000 Dommetty et al. 370/395.52
6,160,793 A * 12/2000 Ghani et al. 370/236

6,201,792 B1 * 3/2001 Lahat 370/236
6,252,853 B1 * 6/2001 Ohno 370/242
6,259,699 B1 * 7/2001 Opalka et al. 370/389
6,317,431 B1 * 11/2001 Hodgkinson et al. 370/392
6,320,874 B1 * 11/2001 Crump et al. 370/401
6,339,594 B1 * 1/2002 Civanlar et al. 370/352
6,343,083 B1 * 1/2002 Mendelson et al. 370/392
6,343,322 B2 * 1/2002 Nagami et al. 370/395.3
6,343,326 B2 * 1/2002 Acharya et al. 709/238
6,381,244 B1 * 4/2002 Nishimura et al. 370/395.21
6,490,252 B1 * 12/2002 Riggan et al. 370/237

* cited by examiner

Primary Examiner—Hassan Kizou

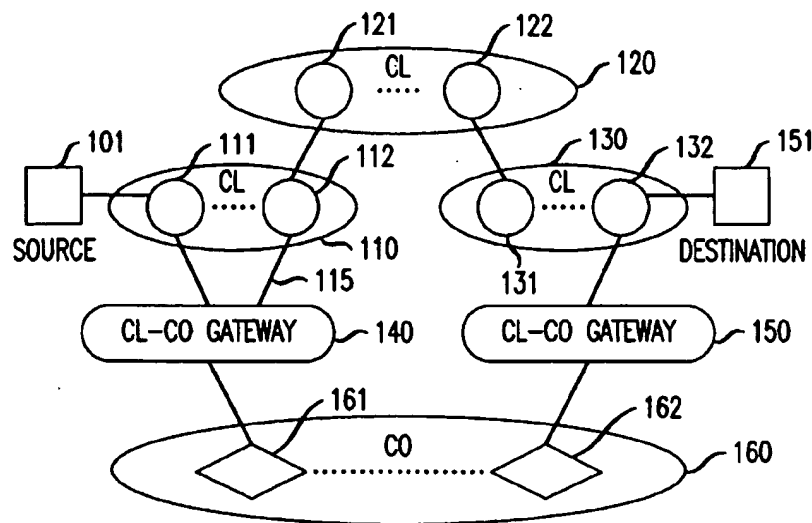
Assistant Examiner—Ahmed Elallam

(74) *Attorney, Agent, or Firm*—Matthew J. Hodulik; Barry
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(57) **ABSTRACT**

Traffic on a connectionless (CL) network, such as IP packets, can be routed onto a connection oriented (CO) network, such as an ATM telephony network, when it is advantageous to do so from a user or service provider viewpoint, without affecting the ability of users to continue to use existing applications. Routing is controlled by nodes called CL-CO gateways, with connectivity to both the CL network and the Co network. When CL traffic originating at a source reached these gateway nodes, a decision is made whether to continue carrying the information in the CL mode, or to redirect the traffic to a CO network. In accordance with one embodiment of the present invention, each CL-Co gateway includes hardware and software modules that typically comprise (a) interfaces to the Co network, (b) interfaces to the CL network (c) a moderately sized packet buffer for temporarily storing packets waiting for CO network setup or turnaround; (d) a database for storing forwarding, flow control header translation and other information, and (e) a processor containing logic for controlling the gateway packet handling operations.

19 Claims, 9 Drawing Sheets





US006597686B1

(12) United States Patent
Smyk**(10) Patent No.: US 6,597,686 B1****(45) Date of Patent: *Jul. 22, 2003****(54) APPARATUS AND METHOD FOR INTERNET TELEPHONY ROUTING****(75) Inventor:** Darek A. Smyk, Piscataway, NJ (US)**(73) Assignee:** Telcordia Technologies, Inc.,
Morristown, NJ (US)**(*) Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/063,684**(22) Filed:** Apr. 21, 1998**Related U.S. Application Data****(60)** Provisional application No. 60/044,143, filed on Apr. 22, 1997.**(51) Int. Cl.⁷** H04L 12/66**(52) U.S. Cl.** 370/352; 370/401; 370/252**(58) Field of Search** 370/217, 218,
370/232, 236, 237, 238, 352-356, 389,
912, 400, 401, 252; 379/221**(56) References Cited****U.S. PATENT DOCUMENTS**

4,771,425 A	9/1988	Baran et al.	370/85
5,095,480 A	3/1992	Fenner	370/94.1
5,712,907 A	1/1998	Wegner et al.	379/112
5,724,412 A	3/1998	Srinivasan	379/93.23
5,751,706 A	5/1998	Land et al.	370/352
6,064,653 A *	5/2000	Farris	370/237

6,069,890 A * 5/2000 White et al. 370/352

6,128,379 A * 10/2000 Smyk 379/230

6,137,792 A * 10/2000 Jonas et al. 370/354

6,154,445 A * 11/2000 Farris et al. 370/237

6,205,135 B1 * 3/2001 Chinni et al. 370/356

FOREIGN PATENT DOCUMENTS

JP 10-178503 6/1998

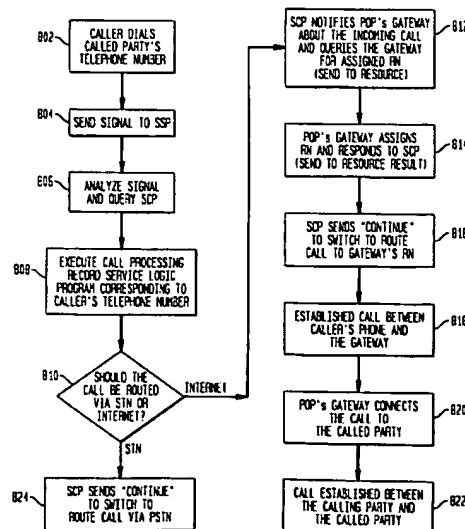
OTHER PUBLICATIONS

Yang, C., INETPhone: Telephone Services and Servers on Internet, RFC 1789, Apr. 1995, pp. 1-6.

* cited by examiner

Primary Examiner—Hassan Kizou*Assistant Examiner*—John Pezzlo**(74) Attorney, Agent, or Firm**—Joseph Giordano; James W. Falk**(57) ABSTRACT**

An apparatus and method for automatically designating a telephone call route through a telephone network including a circuit switched telephone network (STN) and a packet switched network, such as the Internet. The method includes the steps, executed by a network element, of receiving a telephone number corresponding to a called party receiving the telephone call, reviewing preference information pertaining to a calling party's telephone service, determining whether the telephone call can be routed to the called party through the packet switched network, and assigning a route for the telephone call through one of either the packet switched network or the STN to the called party based on whether the call is routable through the packet switched network. A network element (NE) includes the databases and call processing records necessary to route a call and perform these steps.

6 Claims, 9 Drawing Sheets



US006584094B2

(12) **United States Patent**
Maroulis et al.

(10) **Patent No.:** US 6,584,094 B2
(45) **Date of Patent:** *Jun. 24, 2003

(54) **TECHNIQUES FOR PROVIDING
TELEPHONIC COMMUNICATIONS OVER
THE INTERNET**

(58) **Field of Search** 370/400, 401,
370/410, 522, 524, 230, 389, 352, 356,
355; 379/229-232, 900

(75) **Inventors:** Serafim Maroulis, Belford, NJ (US);
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NJ (US); Dennis W. Specht, Sparta, NJ
(US)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,604,737 A * 2/1997 Iwami et al. 370/352
5,608,786 A * 3/1997 Gordon 370/401
5,790,548 A * 8/1998 Sistanizadeh 370/401
6,078,579 A * 6/2000 Weingarten
6,324,280 B2 * 11/2001 Dunn et al. 370/352

(73) **Assignee:** Avaya Technology Corp., Basking
Ridge, NJ (US)

(*) **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

* cited by examiner

Primary Examiner—Steven Nguyen

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(57) **ABSTRACT**

Improved methods for providing a voice communications path over the internet. According to a first embodiment, a first PBX coupled to a first internet gateway device determines whether or not a second PBX has access to a second internet gateway device and, if so, the second PBX sends the IP (internet protocol) address of the second internet gateway device to the first PBX, and the first PBX sends the IP address of the first internet gateway device to the second PBX, over the PSTN (public switched telephone network) and/or over a network signalling channel. The first and second internet gateway devices then set up a voice communications path over the internet between the first and second PBXes.

(21) **Appl. No.:** 08/713,050

(22) **Filed:** Sep. 12, 1996

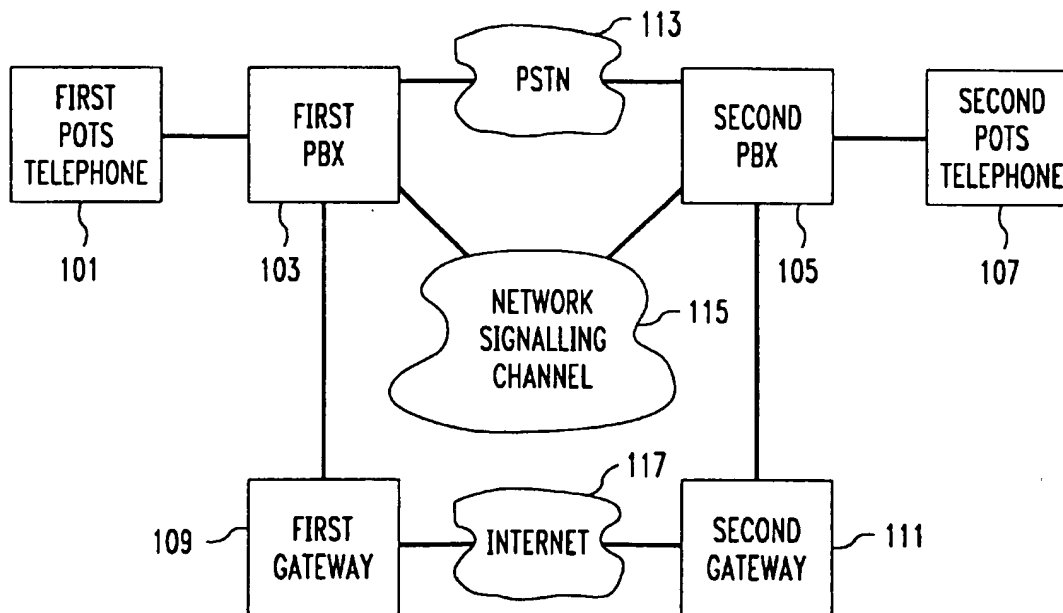
(65) **Prior Publication Data**

US 2003/0081590 A1 May 1, 2003

(51) **Int. Cl.⁷** H04L 12/66

(52) **U.S. Cl.** 370/352; 370/522; 379/900

15 Claims, 3 Drawing Sheets





US006445695B1

(12) **United States Patent**
Christie, IV

(10) **Patent No.:** **US 6,445,695 B1**
(45) **Date of Patent:** **Sep. 3, 2002**

(54) **SYSTEM AND METHOD FOR SUPPORTING COMMUNICATIONS SERVICES ON BEHALF OF A COMMUNICATIONS DEVICE WHICH CANNOT PROVIDE THOSE SERVICES ITSELF**

(75) **Inventor:** **Samuel H. Christie, IV**, Cary, NC (US)

(73) **Assignee:** **Nortel Networks Limited**, St. Laurent (CA)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/223,880**

(22) **Filed:** **Dec. 31, 1998**

(51) **Int. Cl.⁷** **H04L 12/66; H04J 3/16**

(52) **U.S. Cl.** **370/352; 370/466**

(58) **Field of Search** **370/264, 351-4, 370/389, 395.1, 395.61, 395.5, 419, 463, 465-469, 400-2**

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,031,896 A * 2/2000 Gardell et al. 370/352

6,161,008 A * 12/2000 Lee et al. 370/352
6,229,804 B1 * 5/2001 Mortsof et al. 370/352
6,259,691 B1 * 7/2001 Naudus 370/352
6,275,574 B1 * 8/2001 Oran 370/352
2001/0026548 A1 * 10/2001 Strathmeyer et al. 370/356
2001/0028649 A1 * 10/2001 Pogossians et al. 370/389
2001/0028654 A1 * 10/2001 Anjum et al. 370/401
2002/0018464 A1 * 2/2002 Kikinis 370/352

* cited by examiner

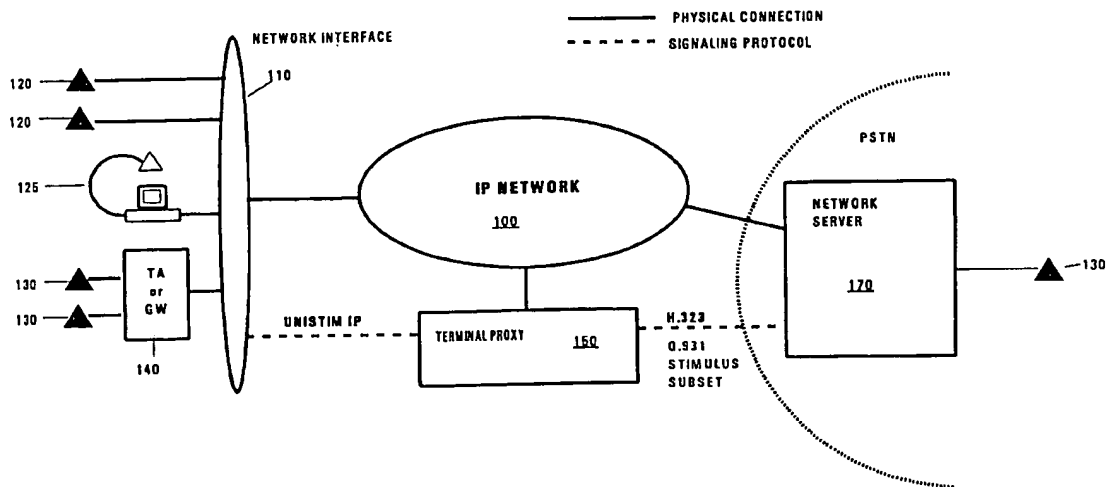
Primary Examiner—David Vincent

(74) *Attorney, Agent, or Firm*—Withrow & Terranova, P.L.L.C.

(57) **ABSTRACT**

A system and method for supporting communications services on behalf of a communications device which cannot provide those services itself in a communications network based on functional signaling. A terminal is designed to identify a supporting server/terminal proxy upon initialization. Henceforth, the terminal provides each user input stimulus to the server and responds to stimulus from the server. The server manages the state machine of the terminal, provides supplementary services, and meets protocol requirements for the network interface.

16 Claims, 2 Drawing Sheets





US006295292B1

(12) **United States Patent**
Voit et al.

(10) **Patent No.:** **US 6,295,292 B1**
(45) **Date of Patent:** **Sep. 25, 2001**

(54) **INBOUND GATEWAY AUTHORIZATION
PROCESSING FOR INTER-CARRIER
INTERNET TELEPHONY**

5,608,786 3/1997 Gordon 370/352

(List continued on next page.)

(75) **Inventors:** **Eric A. Volt**, Baltimore; **Edward E. Balkovich**, Potomac, both of MD (US); **Robert D. Farris**, Sterling, VA (US); **William D. Goodman**, Collegeville, PA (US); **Jayant G. Gadre**, Oakton; **Patrick E. White**, Vienna, both of VA (US); **David E. Young**, Silver Spring, MD (US)

OTHER PUBLICATIONS

Yang, C. "INETPhone: Telephone Services and Servers on the Internet," <http://ds.internic.net/rfc/rfc1789.txt> (Feb. 12, 1997).

Primary Examiner—Min Jung

(74) *Attorney, Agent, or Firm*—McDermott, Will & Emery

(73) **Assignee:** **Bell Atlantic Network Services, Inc.**, Arlington, VA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **08/998,274**

(22) **Filed:** **Dec. 24, 1997**

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/931,159, filed on Sep. 16, 1997, now Pat. No. 6,137,869, and a continuation-in-part of application No. 08/931,480, filed on Sep. 16, 1997, and a continuation-in-part of application No. 08/931,268, filed on Sep. 16, 1997, now Pat. No. 6,157,636, and a continuation-in-part of application No. 08/931,477, filed on Sep. 16, 1997, now Pat. No. 6,157,648, and a continuation-in-part of application No. 08/931,267, filed on Sep. 16, 1997, and a continuation-in-part of application No. 08/812,075, filed on Mar. 6, 1997, now Pat. No. 6,104,711.

(51) **Int. Cl.⁷** **H04L 12/64**

(52) **U.S. Cl.** **370/352; 370/401**

(58) **Field of Search** **370/352, 353, 370/354, 355, 356, 400, 401, 402, 462, 463**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,247,571 9/1993 Kay et al. 379/207

46 Claims, 31 Drawing Sheets

